

MINES AND QUARRIES AND PETROLEUM AND NATURAL GAS WELLS.

GENERAL INSTRUCTIONS.

114. Instructions for census of manufactures apply.—All of the instructions in regard to methods and practices to be followed by the field force in collecting statistics of manufactures apply equally to the collection of statistics of mines, quarries, mineral reduction mills, and petroleum and natural gas wells, except as noted in the instructions which follow. These instructions are additional and for the purpose of covering certain special features of the schedules for these latter industries.

115. Verification of name and address of company.—In a number of cases the lists and index cards give only the name of the mine or the name and address of the mine superintendent or manager. The agent must, in such cases, inquire as to the name and address of the operating or owning company and secure the report from the mine office or the company office, if in his district. If the agent finds that the report can not be secured within his district, he must report the fact as instructed in paragraph 12.

In case of mines and quarries agents must exercise special diligence in conformity to instructions in paragraph 12 concerning the verification of the name and address of the person who will furnish the information, if not available at the mine.

116. Unit of enumeration.—The mine, mineral reduction mill, quarry, well, or group of mines, quarries, or wells, all in the same district or territory and owned or operated by one and the same operator, is the unit of enumeration, corresponding with the establishment for manufactures, and the instructions, paragraphs 44 to 47, concerning separate reports for establishments must be followed.

117. Mines, mills, quarries, and wells to be reported.—All classes of mines, quarries, and petroleum and gas wells that were in operation during any portion of the year (including those operated by penal, eleemosynary, and educational institutions) except as set forth in paragraph 118, must be reported.

118. Operations to be omitted from the census:

- a. Mines, mills, quarries, or wells that were idle during the entire year.
- b. Small bituminous coal banks producing less than 1,000 tons annually.
- c. Itinerant individual placer gold miners and miners hunting for precious stones who employ no help.

d. Prospectors.

e. The digging or dredging of sand and gravel for the construction of roads and for building operations or other purposes.

f. Natural mineral waters.

g. The digging and preparation of peat.

h. The digging and preparation of marls, both calcareous, and greensand.

i. Mining of minor and rare minerals such as strontium ores, monazite, zircon, etc., unless conducted as part of an established industry producing other mineral products.

119. Development work to be reported.—Mines at which development work was carried on during the year must be reported whether or not there was production. (See par. 134.)

120. Mining and manufacturing.—There are several branches of mining and quarrying in which the mineral products do not reach the market in the crude condition, but are subjected to certain manufacturing processes at the mine or quarry, such as cutting, crushing, separating, washing, burning, calcining, or concentrating, before being regarded as marketable commodities. In such cases the general and supplemental mining schedules should cover the entire work of mining the crude material and its preparation for the market. There are some exceptions to this general rule to which special attention is called:

Clay mining and clay products.—The mining of clay and the manufacture of clay products are generally carried on in the same establishment; in such cases the entire operations should be reported on the general and supplemental schedules for manufactures. Only where the clay is mined and sold as such, and no manufacturing done, is a report to be made on the general and supplemental schedules for mines and quarries.

Limestone and lime.—The quarrying of limestone and the burning of the stone into lime are usually done by the same establishment, and the entire operations should be reported on the general and supplemental schedules for manufactures; but where limestone is also quarried and sold as such a report in detail for such stone should be made on the mines and quarries supplemental limestone schedule (Form 223), and for the lime on the manufactures lime schedule (Form 180). Where limestone is quarried solely for sale or use other than burning into lime, reports should be made only on mines and quarries general and supplemental schedules.

Natural-gas gasoline.—Natural-gas gasoline, or casing-head gasoline, is made at the gas or oil well and the entire operations should be reported on the General Schedule for petroleum and natural gas and the supplemental schedule for natural-gas gasoline. Gasoline made

from petroleum by distillation should be reported on the general and supplemental schedules for manufactures.

Salt mines and plants producing salt from sea, lake, or well brines.—Salt in some localities is obtained by mining rock salt, but for the most part it is produced from brines and in any case the raw material is converted by manufacturing process, by the producer, into marketable products. All salt manufacturing operations including preliminary mining, if any, should be reported on the General Schedule for manufactures and on supplemental manufactures schedule for salt works (Form 182).

121. The milling of minerals and earths.—The following mineral and rock products are generally subjected to some process of preparation for market at the mine or quarry by the mine or quarry operators:

Abrasive materials, *Supplemental Form 201.*

Asbestos, *Supplemental Form 204.*

Barytes, *Supplemental Form 206.*

Clays, including kaolin, *Supplemental Form 212.*

Feldspar, *Supplemental Form 214.*

Fluorspar, *Supplemental Form 215.*

Fuller's earth, *Supplemental Form 216.*

Graphite, *Supplemental Form 219.*

Gypsum, *Supplemental Form 220.*

Magnesite, *Supplemental Form 224.*

Mica, *Supplemental Form 227.*

Natural mineral pigments, including ocher, etc., *Supplemental Form 229.*

Silica, including flint and quartz, *Supplemental Form 236.*

Talc and soapstone, *Supplemental Form 239.*

Whiting or chalk, *Supplemental Form 223 (Limestone.)*

For establishments where finishing operations—trimming, crushing, concentrating, cleaning or washing, grinding, grading, and calcining, roasting or burning—on mine or quarry products are conducted by the mine or quarry operator as a part of, or closely associated with, the mining or quarrying, a General Schedule for mines and quarries should be used and the proper "mines and quarries" supplemental, as indicated by the form numbers for the various schedules.

Establishments which do not operate mines or quarries, but manufacture prepared products from purchased crude material must be reported on the General Schedule for manufactures.

For an establishment which mines or quarries, prepares the raw material, and then uses it in further manufacture—for example, sand-paper manufacturers who use quartz or garnet produced in their own quarries to manufacture abrasive papers; paint manufacturers who mine ocher, etc., and then grind the pigment in oil in the manufacturing of paint—a report should be made on the General Schedule for manufactures and a report, for the details of the quarrying or mining.

on the proper mines and quarries supplemental. If it is possible, in case of an establishment of this kind, to separate the mining and manufacturing operations, this should be done and segregated reports secured on the General Schedules for manufactures and for mines and quarries.

GENERAL SCHEDULES FOR MINES AND QUARRIES AND FOR PETROLEUM AND NATURAL GAS.

122. General Schedule required for each mine, quarry, mineral reduction mill, well, or group of wells.—These schedules (Forms 200 and 300) correspond to the General Schedule for manufactures, and all mines and quarries and mills engaged in dressing and reducing mineral products must be reported on the schedule for mines and quarries (Form 200) and each petroleum or natural gas well or group of wells on the schedule for petroleum and natural gas (Form 300). The general instructions in paragraphs 52 to 110 must be followed as far as applicable in the preparation of reports on these schedules. Care should also be taken to follow the instructions contained in paragraph 50 concerning the separation of the values represented by the mining industry from those for other industries carried on in connection with the mines. Special attention is called to the following inquiries, which differ in important respects from those on the schedule for manufactures, and for which some additional information may be of assistance in preparing the reports.

INQUIRY 1.—DESCRIPTION OF ESTABLISHMENT.

123. Name.—Special inquiry and effort should be made to secure the name of mine, quarry, or mill, for although many do not have such name distinct from that of owner or operator, most of the older important mines, quarries, and mills, or groups of them have distinctive names.

124. Location of mine and quarry.—The location of mines, quarries, and wells in remote or unsettled regions and not in incorporated cities or towns should be made by reference to *nearest* city, town, railroad station, or post office. A location by township, range, section, and quarter section, if known, should be obtained and reported whenever possible on both the general and supplemental schedules.

INQUIRY 2.—CAPITAL ACTUALLY INVESTED AND AREA OF MINERAL AND OTHER LANDS.

125. Capital.—Subdivision and itemization of capital, as in the manufactures schedule, is not called for on the mines and quarries schedule. Only the total is wanted, but agents should make sure that items specified in the manufactures General Schedule are included.

126. Lands.—Include all lands as actually pertain to mining, quarrying, milling, or oil and gas producing properties covered by the schedule. This should cover not only lands held in fee, but also unpatented public land "claimed" for mineral, oil, timber or other rights, also rented lands and rights, patented or unpatented, lands held for tunnel, drainage, power, and mill sites, and transportation privileges, pertaining to the operations covered by the schedule.

INQUIRY 4.—WAGE EARNERS, INCLUDING EMPLOYEES PAID BY TON, CAR, YARD, OR OTHER UNIT.

127. Number of classes.—The mines and quarries General Schedule calls for separation of the number of employees engaged in different classes of labor and also of the number employed above and below ground. This separation can usually be made from the pay roll, but if not, effort should be made to get careful estimates (from mine managers or superintendents directly, or through reporting offices). In every case of schedules covering both mining or quarrying proper, and milling or finishing operations, separation of number of employees according to these major lines must be sought.

128. Labor indirectly employed.—It is desired to account for the total number of persons employed in or about the mine, quarry, or wells, and care must be taken, therefore, to report the number employed by contractors, lessees, etc. While this number can not be obtained from the operator's pay roll, he should be able to give an estimate, and this may be accepted unless the exact number can be obtained from the contractor. (See par. 130.)

Miners compensated by share of product may not appear on the regular pay roll as wage earners. Some record, however, is undoubtedly kept of such persons, and the number should be ascertained and included with the total number reported as "employed otherwise, as by contractors, etc." This number should, of course, include the persons employed by the block lessees, leasers, etc. (See par. 131.)

Inquiry should also be made as to whether any females are employed in and about the mine or quarry, and the number must be given as called for in Inquiry 4.

INQUIRY 6.—SALARY AND WAGE PAYMENTS.

129. Net amount required.—In addition to the instructions contained in paragraphs 76 to 80 for the answer to this inquiry, attention is called to the fact that the net amount paid in wages must be reported. In many branches of the mining industry the mine worker is required to furnish his own explosives, fuel, etc. Very often the supplies are

procured for him by the operator and the cost is charged to him and deducted from his wages. If the pay roll shows the gross wages, the amount charged for supplies, and the net balance paid, the net amount only should be reported. If the pay roll shows only net wages paid after subtracting the cost of supplies, report the amount so stated. If the pay roll shows only gross wages paid, a separate account of explosives and other supplies sold to miners being kept with each employee by the company's store, the amount so charged should be subtracted from the total gross wages in order to obtain the net wages.

If the charges for explosives and other supplies appear neither on the pay roll nor elsewhere as a separate account, an estimate of the amount should be obtained from the operator and deducted from gross wages.

The amount charged to miners for explosives, lamp fuel, and other supplies and deducted from gross wages in computing the net wages must be included in the amount reported for cost of materials and supplies under Inquiry 9 (first item).

130. Contract miners.—A contract miner is one who undertakes to mine coal or other mineral products at a stipulated price per ton, car, or yard, with the help of men engaged and paid by him, either by the same unit or by the day or week, out of the total amount he receives.

131. Miners and others compensated by share of product.—In the Kansas-Missouri lead and zinc mines and in the Colorado silver-lead mines, and possibly in some other cases, there are, in addition to the regular wage earners employed by the day or by the task, special classes of labor designated as "leasers," "block lessees," "tributers," etc. Technically, they "lease" from the operator a block in the mine and "pay" a stipulated royalty. In reality all the ore hoisted is usually delivered to the operator and marketed by him or shipped in his name to the sampler or smelter, and the operator retains his royalty or authorizes the ore buyer to withhold the same, and pays to the "lessees" their share of the proceeds. In all cases these workers furnish their own mine supplies. While resembling in form an ordinary mining lease, this is in substance a contract of employment on a share of the product.

This class of miners is seldom, if ever, included in the general pay roll. A separate account will, as a rule, be kept with them, from which their compensation must be ascertained. In some cases the books of a mine owner will show nothing but the royalty obtained by him as an item of income; in that case the compensation of the miners will have to be computed from the rate of royalty received by the

operator. For example, if the operating company has credited its income account with \$10,000 as royalties, and the rate of royalty received by it is 20 per cent of the product, then the share received by the mine worker should be 80 per cent, i. e., \$40,000; in that case \$40,000 should be reported in answer to this inquiry as the amount paid to miners compensated by share of product.

132. Amount paid for contract work.—The work referred to here is of a more or less casual nature, for example, tunneling, shaft sinking, boring test holes, etc. It is quite distinct from mining proper done by contract miners, which is incident to the regular operation of the mine.

INQUIRY 8.—MISCELLANEOUS EXPENSES.

133. Rent and royalties.—In addition to the instructions in paragraph 83, attention is called to the fact that the amount paid for rent includes the amount paid for royalties. "Rent" is a fixed amount paid monthly or annually for the use of land, plant, tunnel, and other property. "Royalty" is a stipulated share of the product of the mine usually paid for the privilege of mining, and sometimes also in lieu of rent of plant, equipment, etc.

134. Development work.—The extension and improvement of the mine usually goes on with the regular mining, and sometimes it is not easy to draw the line between development work and mining; for example, where ore is extracted from the ground incident to sinking a shaft or boring a tunnel. As a rule, however, a portion of the expenses will be charged on the books to development, the balance representing the expense of operation.

In answer to this inquiry the total amount should be reported which was charged during the year to development.

SUPPLEMENTAL SCHEDULES.

135. Cooperation with Geological Survey and Bureau of Mines.—To avoid duplicate inquiries, the Geological Survey and the Bureau of Mines, which collect annual statistics relating to the mineral industries, and the Bureau of the Census, have made arrangements for the joint use of the data collected on the general and the supplemental schedules. The supplemental schedules must accompany the General Schedule in the same manner as the supplemental schedules for manufactures accompany the General Schedule for those industries. (See pars. 112 and 113.) The specific information for the Geological Survey and the Bureau of Mines is carried on the supplemental schedule, and therefore a supplemental schedule or schedules must accompany every General Schedule.

136. Application of supplemental schedules.—As is the case with manufactures, it will be necessary in some cases to prepare more than one supplemental schedule for the mines and quarries reported on a single General Schedule. (See par. 112b.) Some of the supplemental schedules enumerate all the mineral products produced in connection with the principal product, with instructions to report the details of the minor products or by-products on the same or other supplemental schedules. All of the minor products or by-products could not be provided for, and the agent must see that the statistics of production correspond to the data on the General Schedule.

In the case of those supplemental schedules which call for agreement of total value of products with total value of products in Inquiry 10 of the General Schedule, there must be exact agreement of the total values and either proper correspondence of the items entering in the totals or adequate explanation when elements of the totals are differently itemized on the two schedules. Total value of products is not required by many of the mines and quarries supplemental schedules, the schedules in those cases stating that "the total value of products is to appear on the General Schedule for mines and quarries." These supplemental schedules provide primarily for a report on quantity produced, and, in most cases, also quantity and value of sales in 1919. Total sales may, by reason of accumulation of stocks or withdrawal from stocks during the year, differ more or less from the actual production of the year. The data required on the supplemental will, however, generally make it possible to reconcile the "value of ore, mineral, or stone" on the General Schedule with the total quantity produced as reported on the supplemental schedule, and the agent must see that there is a satisfactory agreement.

137. List of supplemental schedules.—In addition to the general schedule for mines and quarries and the special general schedule for petroleum and natural gas wells, the following supplemental schedules have been prepared for mines, quarries, and petroleum and natural gas wells:

MINES AND QUARRIES.

Form number.	Form number.
201. Abrasive materials (miscellaneous).	220. Gypsum and gypsum products.
202. Anthracite (Pennsylvania).	221. Iron ore.
203. Antimony ores.	222. Lead and zinc mines.
204. Asbestos.	223. Limestone and dolomite.
205. Asphalt and allied substances.	224. Magnesite.
206. Barytes (crude).	225. Manganese and manganiferous ores.
207. Basalt (trap rock).	226. Marble.
208. Bauxite.	227. Mica.
209. Bituminous coal.	228. Millstones and chasers.
210. Bituminous coal (local commercial).	229. Natural mineral pigments.
211. Chromite (chrome ore).	230. Placer and surface mines.
212. Clay (mines).	231. Phosphate rock.
213. Copper mines (Lake).	232. Pyrite.
214. Feldspar.	233. Quicksilver.
215. Fluorspar.	234. Rare metals.
216. Fuller's earth.	235. Sandstone.
217. Gold, silver, copper, lead and zinc, deep mines.	236. Silica (quartz).
218. Granite.	237. Slate.
219. Graphite.	238. Sulphur.
	239. Talc and soapstone.
	240. Tin ores.

PETROLEUM AND NATURAL GAS.

Form number.	Form number.
301. Petroleum.	303. Natural gas (B).
302. Natural gas (A).	304. Natural-gas gasoline.

The inquiries on the supplemental schedules are direct, and as a rule require no explanation, but special attention is called to the following:

138. Abrasive materials (Form 201).—This schedule is to be used for reporting emery, corundum, garnet, tripoli, rottenstone, diatomaceous earth (otherwise known as tripoli, tripolite, infusorial earth, Kieselguhr, or fossil flour), pebbles used in tube mills for grinding, tube-mill lining, and pumice. *A separate supplemental report must be made for each kind of product.* In Alexander and Union Counties, Ill., some producers of material classed as tripoli by the Geological Survey

insist that their product is silica. Report may be taken on the silica schedule (Form 236), but for sake of uniformity and comparability of records use of the abrasive schedule is preferred.

139. Anthracite coal.—The supplemental schedule (Form 202) on anthracite is to be used *only for Pennsylvania* anthracite operations. Coal in other regions, notably northwestern Arkansas and some locations in Colorado, commonly designated anthracite, is for statistical purposes classed as bituminous by the Census Bureau and the Geological Survey. The unit of enumeration is the breaker or washery. Nevertheless, a full list of mines supplying coal to each breaker *must* be obtained. Inquiry 2 of the supplemental requires full days in operation, parts of days to be reduced to equivalent full days, and does not call for the same reply as Inquiry 7 of the General Schedule, which requires number of all days in which there was any productive activity or development work. Inquiry 3 of the supplemental is for determining from the whole number of employees on the pay rolls for the year, whole and part time, an equivalent number of full-time employees. The mine operators should be asked to determine this figure by the same method used in reply to the Geological Survey's regular annual canvass.

140. Bituminous coal.—Two forms of schedule have been provided. The longer (Form 209) is to be used, so far as possible, for reporting all bituminous-coal mining operations. But smaller operations, for which detailed information required by Form 209 can not be obtained, may be reported on Form 210, which is designed for use of small mines not using mining machines and normally producing less than 3,000 tons, chiefly for local commercial use. Small coal banks not employing regular mine labor and producing less than 1,000 tons annually are excluded from the census canvass. Coal mines of larger producing capacity which produced less than 1,000 tons because recently opened, or developing, or because of adverse conditions during 1919, or other reasons, must be reported.

Concerning inquiries on time in operation and number of employees, see paragraph 139 on anthracite coal.

Lignite is for purposes of the census to be reported as bituminous coal.

141. Fluorspar.—At a few mines in Kentucky and Illinois where fluorspar is crushed and cleaned by concentration, silver-bearing lead concentrates are recovered. The quantity of these concentrates should be entered in reply to Inquiry 1, fluorspar supplemental schedule (Form 215), in the form of an additional item (*d*), and the net value of these concentrates should be included with the value of products reported on the General Schedule. Furthermore a report on the silver-

bearing lead concentrates should be secured on Form 222. For instructions concerning this form, see paragraph 145.

142. Manganese and manganiferous ores.—This schedule (Form 225) applies only to mines which produce ore used for its manganese content. If the ore contained silver in paying quantities, it is to be regarded as a silver ore and should be so reported on Form 217.

143. Placer and surface mines.—The gold product of placer mines is not fine gold. The ounces are crude ounces. But the fineness of the gold fluctuates within narrow limits and the miner, as a rule, knows the average fineness of the gold from his mine. The mint value of an ounce of fine gold is \$20.67; the value of a crude ounce varies with the fineness of the gold.

In dredging for gold a record is kept, as a rule, of the quantity of material or volume of the ground handled. The quantity being determined by the capacity of the dredge, it can easily be calculated, even where no record is kept.

Under other methods of working a commercial company will keep a record of the quantity of material handled or of the average recovery of the gold per cubic yard. The average recovery can be used as a basis for estimating the quantity of material handled.

144. Gold, silver, copper, lead and zinc, deep mines (Form 217).—This schedule applies to all mines producing gold, silver, copper, lead, and zinc ores, and manganiferous ore carrying precious metals, except the Lake Superior copper mines and the nonargentiferous lead and zinc mines of the Central and Eastern states. (See pars. 147 and 145.) Manganese ores and manganiferous iron ores used only for their manganese and iron content are to be reported on the supplemental schedule entitled "Manganese and manganiferous ores" (Form 225). Separate schedules are provided for the Lake Superior copper mines (Form 213) (see par. 147) and for the lead and zinc mines (Form 222) (see par. 145), whose product carries no precious metals in paying quantities. The items of prime importance on the schedule for deep mines (Form 217) are replies to Inquiries 1, 2, 10, and 11, which must accurately give the quantities of ore sold or treated, the quantities of each kind of concentrates sold or treated, and the assay of each class of ore and concentrates.

The deep-mines schedule (Form 217) does not require a report on the total value of the mine product as such. Inquiry 2 calls for the gross value of metals contained in the ore produced and treated, which is determined in accordance with well-established trade custom by sampling and assaying the ore, and the gross value per ton is determined for each of the metals present in accordance with the assay content.

The sum of these is the gross value required on the supplemental schedule. The net amount received by the mine operator for the product disposed of is the value of ore product required in Inquiry 10 of the General Schedule, and represents the net value of the ore at the mine. This is arrived at by deducting from the gross value of the metal content certain losses in treatment and costs and charges for converting the ores, through milling and smelting operations, into marketable products. These deductions include the following:

a. Haulage and freight.—Very frequently the ore has to be hauled from the mine to a railway station or a mill. The cost of haulage when borne by the mine operator should be deducted from the gross value of the ore. Freight to mills and smelters is generally paid by the works or the buyers, and is deducted from the gross value of the shipments. The cost of freight and haulage per ton usually remains uniform for each mine and can be accurately stated.

b. Penalties.—Sometimes zinc or other metals in the ore are not paid for by the mills and smelters, and also the ores are sometimes penalized for certain impurities in them. Metals not paid for and penalties must be deducted from the gross value.

c. Treatment charges.—Some ores are shipped direct to the smelters but more commonly they are "milled" either for extraction of mill bullion—if free milling—or for concentration to reduce bulk in further freighting to, and handling in, smelters, or they may be milled for both bullion and the making of concentrates. The gross value of bullion and of concentrates is determined by assay, the same as for ores. Mill bullion may be returned to the mine operator and by himself sold to the mint or banks, or it is sold for him by the mill. In either case he is charged with mill treatment costs, which must be separately accounted for and deducted from the gross value of the bullion for arriving at the net value to be reported on the General Schedule in answer to Inquiry 10. In the latter case selling expenses and commissions should also be deducted. There are also similar treatment and selling costs for concentrating which should be similarly accounted for and deducted from the gross value of concentrated product sold or shipped to smelters.

145. Lead and zinc mines (Form 222).—This supplemental schedule is to be used for lead and zinc mines in the Central states—Illinois, Kentucky, Wisconsin, Missouri, Oklahoma, Kansas, and Arkansas—and also the nonargentiferous mines of the Eastern states—New Jersey, New York, Tennessee, and Virginia—but not for the few copper producing mines in Missouri and the lead and zinc mines in New Hampshire, Vermont, and North Carolina, which are to be reported on the other metal mines schedule (Form 217).

As a rule, the mine is combined with a concentrating mill of some sort; the schedule accordingly combines inquiries in relation to both mine and mill. The smaller mines, which have no facilities for milling their ore, have the same treated on toll at, or by outright sale to, a custom mill in the neighborhood; Inquiry 1, (c), (d), and (e), is intended to cover such cases. On the other hand, a mill connected with a mine sometimes treats ore from another mine for a stipulated compensation per ton; such cases are covered by Inquiry 2.

Custom mills in the Central states which do not belong to any mine, but operate exclusively on custom or purchased ore, should be reported on the supplemental schedule for lead and zinc mines (Form 222) by answering Inquiries 2, 3, and 5 (g), and the report should show that the ores handled were purchased or treated on toll. There should be appended a list showing for each mine or mine operator from whom ore was obtained the quantity (tons, 2,000 pounds) of ore, the quantity of concentrates recovered and sold, and the average assay of concentrates.

In the lead and zinc mining region of the Central states the system of tenure of mineral land results in the splitting up of the mining operations among several parties; the mineral land may be owned by one company, the mine developed by another, the mill owned and operated by a third, and the ore mined by a fourth. Usually the product is sold by one party, which retains its share of the proceeds and pays over the balance to the others. In all these cases a full report must be obtained, if possible, from each operating party, but care must be taken that each reports as his own product only the actual quantity of ore mined or treated by him; or if not possible, as complete a report as can be made must be obtained from the landowner or lessee to whom royalties are paid.

146. Reduction mills.—A special schedule has not been provided for ore-reduction mills operated as custom mills (in some places called sampling works). The operations of such mills in connection with metal mines will be included in the report on the schedule for "Gold, silver, copper, lead and zinc, deep mines" (Form 217), and in the report on the schedule for "Lead and zinc mines" (Form 222). In the case of a custom reduction mill operated independently of a mine, a report should be made on the General Schedule for mines and quarries and on the metal mining schedule appropriate to the region, with a statement that all the ores handled are purchased or treated on toll, and there should be appended a list of principal shippers to the mill and the quantities of ore from each.

For methods of valuation of ore and concentrates, see paragraph 144.

147. Lake copper mines.—In the Lake Superior region the crude product of the copper mines is locally called "rock." As a rule, every copper mine in the Lake Superior region is equipped with a mill for dressing the rock; i. e., for removing the worthless material attached to the copper. The product of rock dressing is locally called "mineral." The latter is then treated at a smelter where marketable "lake copper" is produced. If the copper contains silver in paying quantities, it is sent to an electrolytic refinery, where the silver is separated from the copper; the latter is then called "electrolytic copper." The larger mines are equipped with smelters or refineries where their product is treated. The smaller operators either sell their mineral to smelters or have it treated for their account at a custom smelter or refinery. If the mineral is sold, its value is determined in the same manner as that of gold, silver, copper, lead, and zinc ores in other regions (see par. 144); if it is treated at a custom smelter or refinery and the metallic product is marketed by the operator, the latter is credited with the full (gross) value of the metals produced, but the cost of treatment at custom smelters and refineries (haulage, freight, charges for treatment, including selling expenses and commissions) should be accounted for separately, and not included in the net value or amount received for mineral products. The schedule, Form 213, has been designed to cover all the operations of the Lake copper companies' mines and reduction plants, because, as a rule, these operations are conducted as a unit and the product is metallic copper. See, in regard to Lake smelters, instructions in par. 148.

148. Lead smelters, copper smelters, tin smelters, zinc smelters, and antimony smelters.—A report for every smelter must be made on the General Schedule for manufactures and on a manufactures supplemental schedule for smelters.

Where a smelter is operated in combination with a mine, separate reports are required for the mine and the smelter. If the mine and the smelter are operated jointly and only one set of books is kept covering both, a combined report may be made on the General Schedule for mines and quarries, but separate reports must be made on the supplemental schedules for the mine and the smelter.

In case of smelters operated in connection with Lake Superior region copper mines, the manufactures supplemental for copper smelters, Form 176, though apparently not applicable, must be used and is made to conform by the following instructions:

INQUIRY 1 (Form 176). Disregard the words "in blister (converter copper) or in matte," canceling same, and give the total production of fine copper.

INQUIRY 2. Omit.

INQUIRY 3. Change concentrates to "Mineral" at the head of the second column and give the tonnage treated, against the name of the state (Michigan) to be entered in the stub column.

INQUIRY 4. Give the data for slags, smelter cleanings, cinders, etc., and separately for scrap.

INQUIRIES 5 to 9, inclusive, omit.

INQUIRY 10. Substitute *refined copper* for "final product (matte or blister)" and answer inquiry.

Add the following inquiries in the space provided for "Remarks" (entering remarks, if any, at the bottom of the page):

INQUIRY 11. Amount of copper shipped to electrolytic refineries....

INQUIRY 12. Give the name of refinery.....

INQUIRY 13. Recovered by electrolytic refining:

Copper.....fine pounds.

Silver.....fine pounds.

INQUIRY 14. Remarks:

149. Refineries (copper and lead).—A report for every refinery must be made on the General Schedule for manufactures and on a supplemental schedule for copper or lead refineries, as the case may be. Whenever a refinery is combined with a smelter, separate reports must be secured for the refinery and the smelter. In case only one set of books is kept covering both the smelter and the refinery, a combined report may be made on the General Schedule for manufactures, but separate supplemental schedules must be prepared for each. Copper refining in the Lake Superior copper region is an integral part of smelting plant operations, and no separate refinery report can be made. Reports for such operations are covered by the special instructions in paragraph 147.

150. The stone industries—Basalt (trap rock) (Form 207); Granite (Form 218); Limestone and dolomite (Form 223); Marble (Form 226); Sandstone (Form 235); and Slate (Form 237).—Supplemental mines and quarries schedules have been prepared for the quarrying of each of these products. They are designed to cover the quarrying operations and those manufacturing operations, such as crushing and dressing (with only one exception, see par. 120 on lime), which are intimately related with and generally conducted in connection with quarrying. When an establishment is engaged in manufacturing stone products, at the quarry, in connection with the quarrying of the stone, and only one set of books is kept for the two operations, a report must be secured on the General Schedule for mines and quarries and also on the proper supplemental. Such

manufacturing at the quarry includes the preparation of stone for paving materials, for monumental and construction purposes, and for a number of minor uses. Of these minor uses, the making of millstones, for example, must be reported on the millstone supplemental (Form 228). If the product of the quarry is all sold as millstones, no other supplemental is required. The making of grindstones, etc., at the quarry, must be reported on the manufactures supplemental for grindstones, oilstones, whetstones, etc. (Form 177). Attention is called to the fact that usually the making of grindstones is a manufacturing industry and should be reported on the manufactures General Schedule; when, however, the manufacturing operations at the quarry do not to any great extent exceed hand finishing, or require an elaborate plant, a mines and quarries General Schedule should be used.

There are numerous establishments which manufacture stone products from purchased rough stone and are entirely independent of the quarries; these establishments must be reported on the manufactures General Schedule, *not* on the mines and quarries General Schedule, and no reports on the mines and quarries supplemental schedules are to be obtained for them.

151. Petroleum and natural gas.—The special General Schedule for petroleum and natural gas corresponds with the General Schedule for mines and quarries. The inquiries, however, have been framed to meet the conditions peculiar to the petroleum and natural-gas industries, but they agree so closely with those in the General Schedule for mines and quarries that no special instructions are necessary. In every instance this schedule must be accompanied by the supplemental schedule for petroleum or natural gas and for natural-gas gasoline when produced. When both products are obtained from the same well or group of wells covered by the special General Schedule, reports must be made on the respective supplemental schedules.

Two forms—supplemental schedules A and B—have been provided for reporting production of natural gas. Schedule A (Form 302) requires the greater detail as to distribution and measured output in thousands of cubic feet. Wherever possible, this form should be used and the other (Form 303) used only for reporting companies whose output is not metered and which is used largely for local domestic consumption. Form 302 separates domestic and industrial consumption. The distinction will, in general, be readily made, particularly if it be noted that although domestic consumption comprises chiefly household use there may also be included consumption in either ovens and furnaces or in gas engines by small industrial establish-

ments, such as bakers, laundries, small machine and repair shops, and the like. Industrial consumption for fuel implies, in the main, large consumption in kilns, furnaces, and engines by establishments receiving special gas service.

152. Printed reports of mining, quarrying, and oil and gas producing companies.—In cases where an annual report of the company is printed, a copy of the latest report should be secured and forwarded with the schedules. Copies should also be obtained of any other printed matter that will add to the information contained in the schedules.